



Leica ASP300

Advanced Smart Processor

Automated vacuum
tissue processor

Instruction manual

Leica ASP300

V1.3 English - 12/2003

Always keep this manual together with the instrument.

Read this instruction manual carefully
before working with the instrument.

Leica
MICROSYSTEMS

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Published by:

Leica Microsystems Nussloch GmbH

Heidelberger Str. 17 - 19

D-69226 Nussloch

Germany

Telephone: +49 (0) 62 24 143-0

Fax: +49 (0) 62 24 143-200

Internet: <http://www.histo-solutions.com>

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1. Important notes

1.1 Symbols used in this manual and their meaning



Warnings appear in a grey box and are marked by a warning triangle .



Notes, i.e. important user information appear in a grey box and are marked by an information symbol .



Flammable solvents and reagents are marked with this symbol.



Instrument surfaces which become hot during operation are marked with this symbol.

(5)

Figures in brackets refer to item nos. in drawings.

ENTER

Function keys to be pressed on the instrument touch screen are written in bold-print capital letters.

1.2 Designated use

The Leica ASP300 is an automated tissue processor for the following laboratory applications:

- fixation
- dehydration
- paraffin wax infiltration

of histological tissue specimens.

The Leica ASP300 must be operated exclusively with the reagents listed in

[Chapter 3.5 - "Compatible reagents"](#).

Any other use of the instrument is considered improper!



Make sure to comply with the safety instructions and warnings in this chapter. Make sure to read these instructions, even if you are already familiar with the operation and use of other Leica products.

2.1 Safety instructions

This instruction manual includes important information related to the operating safety and maintenance of the instrument and it is an important part of the product.



If additional requirements on accident prevention and environmental protection exist in the country of operation, this instruction manual must be supplemented by appropriate instructions to ensure compliance with such requirements.

Instrument type

All information provided in this manual applies only to the instrument type indicated on the title page.

A name plate indicating the instrument serial number is attached to the back of the instrument.



The protective devices on both instrument and accessories may neither be removed nor modified. Only authorized and qualified service personnel may repair the instrument and access the instrument's internal components.

2. Safety

2.2 Warnings

The safety devices installed in this instrument by the manufacturer only constitute the basis for accident prevention.

Primarily responsible for accident-free operation is above all the institution which owns the instrument and, in addition, the designated personnel who operates, services or repairs the instrument.

To ensure trouble-free operation of the instrument, make sure to comply with the following instructions and warnings.

Transport and installation

Warnings and instructions on transport and installation of the instrument can be found on a separate information sheet attached to the outside of the instrument's shipping crate.

Warnings - reagent handling



To avoid damage to the instrument, only use the reagents listed in [chapter 3.5](#)!

When handling reagents, follow the instructions of the manufacturer and make sure all laboratory regulations in force in your country are complied with.

Dispose of waste solvents with care according to local regulations and the waste management policy of the company or institution.

Use caution when handling hot, molten paraffin.

Do not touch paraffin stations and retort walls – they can be very hot.

Do not clean the reagent bottles in an automatic dishwasher.



Material safety data sheets can be obtained from the supplier of the chemicals.

They are also available on the Internet:

<http://www.msdsonline.com>

Warnings - cleaning and maintenance



Prior to each maintenance switch the instrument off and disconnect mains power.

Do not clean the instrument with solvents containing acetone or xylene. No liquid may be spilled into the internal components of the instrument.

Empty the condensate bottle at regular intervals.

Warnings - working with the instrument



The Leica ASP300 may only be operated by trained laboratory personnel and as per the present instruction manual.

In case of emergency switch off mains (item no. 5 in Fig. 3) at the rear of the instrument and unplug the power cord.

The instrument must be installed so that the mains switch at the rear of the instrument can easily be accessed at any time.

Always press PAUSE before opening the retort lid during processing to allow the retort to vent.

Do not remove the wax drain hose or the remote fill/drain hose until the fill or drain has been entirely completed.

After refilling / replacing the reagent bottles ensure that the lids are tight.

The bottles must be properly pushed home into the connection manifolds at the rear inner wall of the reagent module.

Fixatives containing mercuric salts, acetic or picric acid will corrode metallic components in the instrument.

After each paraffin step a retort clean cycle must be run.

2. Safety

2.3 Integrated safety devices

The instrument is equipped with the following protection features:

- overpressure protection,
- protection against excessive vacuum,
- overcurrent protection,
- overheating protection.

Overpressure protection

The design of the pressure system ensures that no dangerous levels of pressure can build up.

Protection against excessive vacuum

The vacuum system is not capable of generating a dangerous vacuum condition.

Overcurrent protection

Overcurrent conditions are protected against by both the mains fuse and the separate heating power fuses.

Overheating protection

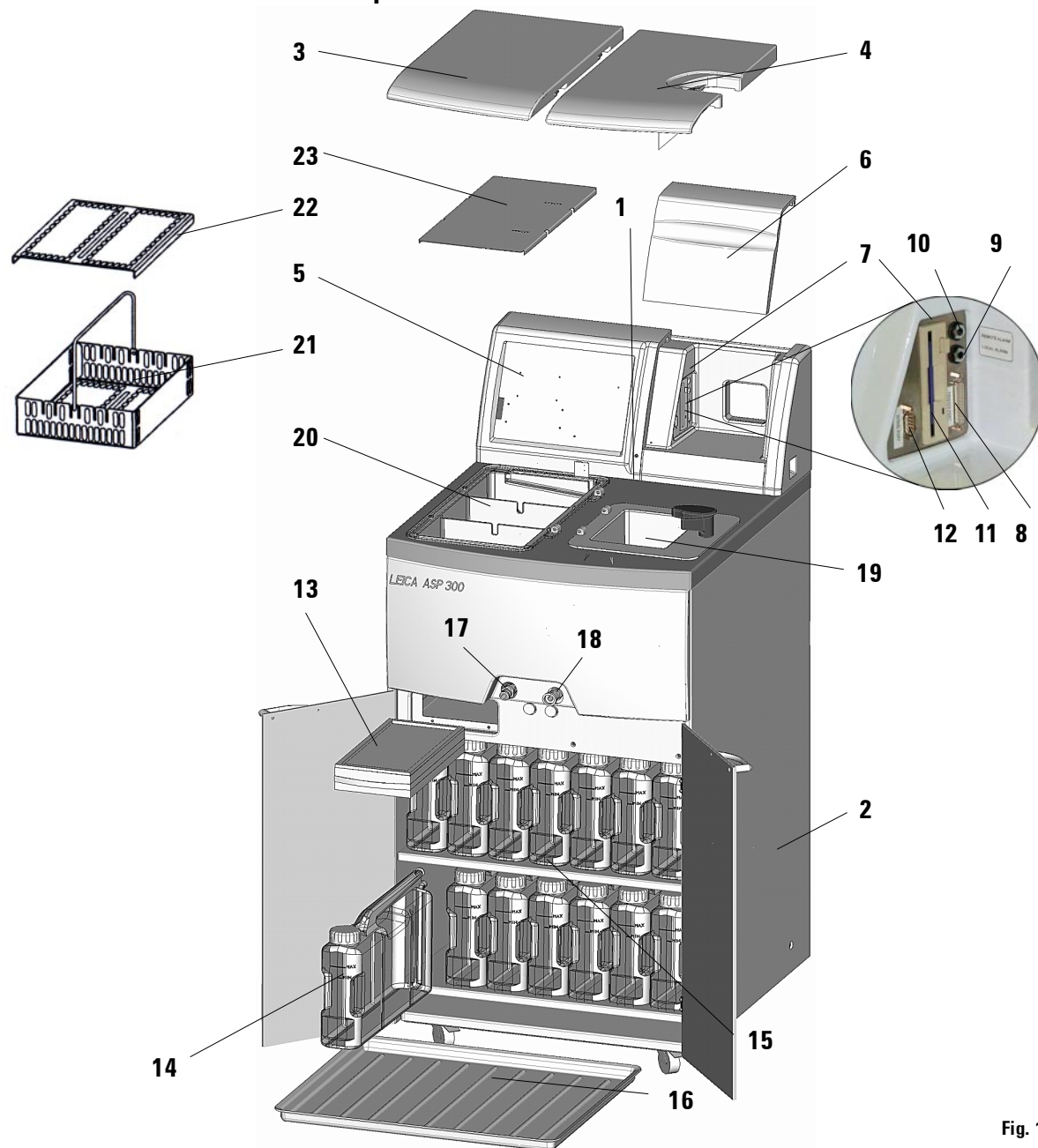
The design of the heating system ensures that no dangerous overheating conditions can occur.

3.1 Specific instrument options

- **Reagent Management System (RMS).**
- The specimen cassette baskets may be used with or without cassette dividers and spring separators designed to separate cassettes and improve fluid penetration.
- In-process fluid recirculation ('tidal agitation') for continuous and efficient mixing of fluids.
- Remote fill/drain system for reagents.
- Remote fill/drain system for paraffin.
- Automatic optical fluid level sensor.
- Active paraffin wax solvent removal feature.
- Magnetic stirrer.
- Programmable program start time delay.
- Programmable finish time for processing programs.
- 3-step retort drain feature.
- Specimen processing under pressure, vacuum, alternating pressure / vacuum cycles or under ambient pressure.
- User-programmable clean cycles.

3. Instrument components and specifications

3.2 Overview - instrument components



3. Instrument components and specifications

Overview - Instrument components

- 1 - **Basic instrument - processor module**
- 2 - **Basic instrument - reagent module**
- 3 - **Wax bath lids**
- 4 - **Retort lid**
- 5 - **Touch screen**
- 6 - **Cover flap of instrument console**
- 7 - **Instrument console comprising:**
 - 8 - **Printer port**
 - 9 - **Local alarm connection**
 - 10 - **Remote alarm connection**
 - 11 - **Floppy disk drive**
 - 12 - **Serial port**
- 13 - **Activated carbon filter**
- 14 - **Condensate bottle**
- 15 - **Reagent bottle (13 units)**
- 16 - **Drip tray**
- 17 - **Wax drain connection**
- 18 - **Remote drain connection**
- 19 - **Retort**
- 20 - **Wax baths**
- 21 - **Specimen basket**
- 22 - **Lid for specimen basket**
- 23 - **Splash protector**

Instrument components and accessories

The processor module comprises three paraffin wax baths and the processing retort.

Three baskets (21) contain the cassettes.

Each basket can hold up to 300 cassettes.

All processing occurs in the stainless steel retort under the pressure, vacuum and temperature conditions selected.

The reagent bottles are stored in the reagent cabinet.

3. Instrument components and specifications

3.3 Standard delivery - packing list

Leica ASP300 basic standard delivery:

1	Leica ASP300 - Basic instrument	0476 34100
1	Accessory kit consisting of:	0476 35929
	- 1 Basket hook	
0476 34713		
	- 3 Specimen baskets, assy., including lid, dividers, springs and handle (accessories for maximum and optimum usage of basket space)	0476 34193
	- 1 Reagent bottle, plastic	0476 34274
	- 2 Activated carbon filters, assy.	0476 34150
	- 1 Remote fill/drain hose, assy. with special connecting device for remote filling / draining of processing retort	0476 34716
	- 1 Paraffin drain hose	0476 34721
	- 1 Paraffin wax scraper, plastic	0476 35923
	- 1 Lubricant 'Molykote 111', for valves and O-rings, 100 g	0336 35460
	- 1 Jumper cable - mains	0411 34604
	- 1 Maintenance kit (2 spare lids, 9 O-rings)	0476 35921
	- 1 Stirrer bar, assy.	0476 34202
	- 2 Sets of labels for reagent bottles, each set containing 15 labels	0476 35792
	- 1 Splash protector	0476 34770
1	Set of power cords:	
	- 1 Power cord D	0411 13558
	- 1 Power cord UK ST-BU F-5A	0411 27822
13	Reagent bottles, plastic (included in the instrument)	0476 34274
1	Condensate bottle, plastic (included in the instrument)	0476 34278
1	Service kit for pump (included in the instrument)	0476 35922
1	Drip tray (included in the instrument)	0476 34145
1	Cover sheet for overflow (included in the instrument)	0476 34852
1	Console cover (mounted to the instrument)	0476 34162
1	3,5 Diskette, empty (taped to the back of console cover)	
1	Instruction manual Leica ASP300 multilingual	0704 37102
1	Demo-Program, CD-Rom	

3.4 Technical data

Nominal voltage:	Two factory-preset voltage settings (not user-adjustable): 100 to 120 V \pm 10% or 230 to 240 V \pm 10%	
Nominal frequency:	50 to 60 Hz	
Main fuses:	2 fast-blowing melting fuses, 20 x 5 mm, UL-listed	Order no.
	<ul style="list-style-type: none">• 100 to 120 V; F 10 A 250 VAC• 230 to 240 V; F 5 A 250 VAC	69411002 69411000
Nominal power:	1,000 VA	
Dimensions (W x D x H), in mm:	595 x 680 x 1,325	
Dry weight, unpacked:	approx. 140 kg	
Weight, packed:	220 kg	
Operating temperature range:	15 °C to 35 °C	
Relative humidity:	10% to 80% - non-condensing	
IEC 1010 classification:	Protective Class 1 Pollution Degree 2 Overvoltage Installation Category II: <ul style="list-style-type: none">• 800 V impulse (120 V systems)• 1500 V impulse (240 V systems)	
Maximum operating altitude:	maximum 2,500 m	
Local / remote alarm relays:	30 V DC, maximum 2 A 2 connections: both single voltage-free, change-over contacts (can be operated as both normally-open and normally-closed connections)	
Paraffin wax baths		
Number of baths:	3	
Volume (liters):	4.3 l per bath	
Melt time:	approx. 10 hrs	
Temperature:	40 to 65 °C	
Temperature accuracy:	\pm 1 °C	

3. Instrument components and specifications

Retort

Capacity:	max. 300 cassettes
Reagent volume (in liters):	4.3
Temperature (paraffin):	40 to 65 °C
Temperature (processing reagents):	ambient or 35 to 55 °C
Temperature (cleaning reagents):	50 to 65 °C
Temperature accuracy:	± 1 K
Filling time:	approx. 90 sec
Drain time :	approx. 80, 120, 140 sec (adjustable)
Impregnation vacuum:	-70 kPa (g)
Impregnation pressure:	35 kPa (g)
Fill vacuum:	-70 kPa (g)
Drain pressure:	35 kPa (g)

General

Reagent bottles	10
Cleaning solution bottles:	3
Maximum bottle volume:	4.3 l
Printer:	Optional accessory
Pretest check:	ON/OFF
Fluid level sensor:	ON/OFF
Recirculation (pump in/out):	ON/OFF
(a) Time before 1st cycle:	12 min
(b) Time between cycles:	20 min

System setup

Password status:	Supervisor / User
Type of password:	alphanumeric, freely selectable
Reagent Management Status:	ON/OFF
Software access control ('Lock Mode'):	ON/OFF

3.4 Technical Data (continued)

Hardware and Software:

- Large color liquid crystal display (LCD) and touchscreen.
- User-friendly, intelligent software.
- 3,5" floppy drive and printer port.
- Alarm system with two remote alarm sockets.
- Password-protected instrument supervisor mode.
- Multiple specimen protection system.

Capacities:

- 15 programs of up to 10 reagent and 3 paraffin wax steps each.
 - Time per program step: 0 to 99 hours , 59 minutes.
 - Delay time: max. 7 days.
- Up to 300 cassettes can be processed simultaneously.
- Four user-programmable retort clean programs.
- Wax clean program.
- 10 Reagent bottles.
- 3 Wax baths.
- 3 Cleaning solution bottles.
- 1 Condensate bottle.
- Reagent temperature adjustable from 35 °C to 55 °C or ambient.
- Paraffin temperature adjustable from 40 °C to 65 °C.
- Choice of three retort drain rates of 80, 120 and 140 seconds.
- Up to 100 reagent names in memory.

3. Instrument components and specifications

3.5 Compatible reagents

Fixatives

1. Formalin, buffered or unbuffered
2. Formalin saline

Dehydration

1. Ethanol
2. Isopropanol
3. Methanol
4. Butanol
5. Industrial Methylated Spirits

Clearing

1. Xylen (recommended)
2. Toluol *
3. Chloroform *

* Prior to using these reagents, contact your Leica representative or Leica directly for information on necessary protective measures. Using these reagents will require an increased number of maintenance interventions by Leica Technical Service.



Caution:

Reagents other than those listed here may damage some components of the instrument.

Do not use acetone, benzene or trichlorethane in the instrument.



Fixatives containing mercuric salts, acetic or picric acid will corrode metallic components in the instrument and shorten instrument life.

If you choose to work with such fixatives, it is essential to perform a clean cycle which contains multiple water rinses each time after use, to minimize damage.

In addition, we recommend frequent and regular preventive maintenance by the Leica Technical Service.

4.1 Site requirements

- The instrument needs approx. 650 x 700 mm floor space.
- Practically vibration-free floor.
- Room temperature constantly between +15 °C and +35 °C.
- Relative humidity maximum 80%, non-condensing.
- Avoid vibrations, direct sunlight and heavy variation in temperature.



The chemicals to be used in the Leica ASP300 are both flammable and noxious. Therefore, the instrument must be set up in a well ventilated area, free from any ignition sources. The room where the instrument is installed is not suitable for people to stay in for longer periods of time, unless it is equipped with a fume extraction system. Do not operate the instrument in rooms with explosion hazard.

Moving the instrument



The instrument must be installed such that the mains switch at the rear of the instrument (item no. 5 in Fig. 3) can easily be accessed at any time.

After the instrument has been unpacked (see unpacking instructions attached to outside of transport crate) it must be touched only at the points marked with dots '○' for transport to its final site of installation. Once the instrument has been installed there, the brakes on the instrument rollers **must** be locked.

4.2 Electrical connection

- Check the voltage label (Fig. 2) on the rear of the instrument to ensure that the instrument is set to the correct voltage range.

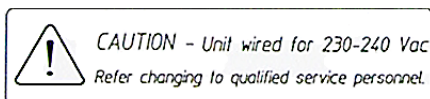


Fig. 2



The power supply voltage for the instrument is factory-preset and **CANNOT** be altered by the user.

Connecting the instrument to mains

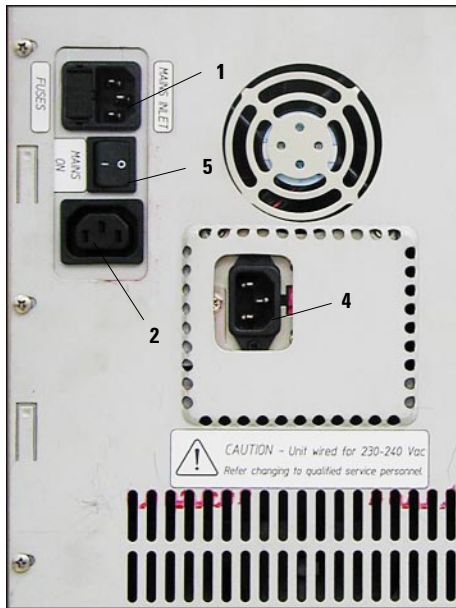


The instrument **MUST** be connected to an earthed mains power outlet socket.

It is recommended that the ASP300 be plugged into a wall socket that has Ground Fault Circuit Interruption (GFCI) protection - as an additional electrical safeguard.

Make sure to use the appropriate mains cable for the local voltage supply (wall outlet).

- Connect mains cable (6) to mains power supply socket (1) (see Fig. 3).
- Jumper cable (3) connects the mains power supply output (2) to the electronics module input (4).
- Switch ON/OFF switch (5) ON.
- Switch ON/STOP switch at the right of the instrument ON.



Electrical connections at the rear panel of the instrument



Fig. 3
Cables connected correctly



Important!

**Specification for connection (2) is as follows:
100 - 120 V or 230 - 240 V, max. 200VA.**

4. Setting up the instrument

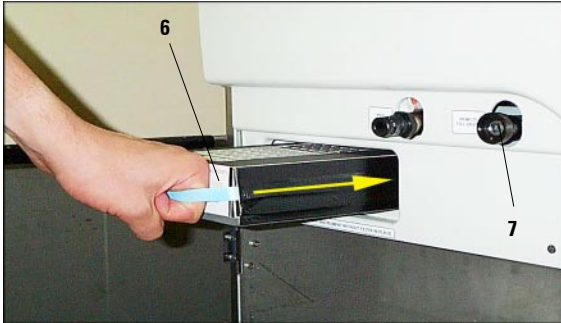


Fig. 4

4.3 Installing the accessories

- Unpack the activated carbon filter and insert it into the instrument (see Fig. 4). Make sure to insert the filter with the correct side facing upwards. See label (6) at the front of the filter - the arrow must point upwards.
 - Unpack the magnetic stirrer and insert into the retort.
 - Install the console flap (covers floppy drive and ports).
- I Prior to filling the bottles with reagent for the first time, check the connections. If necessary, tighten manually.

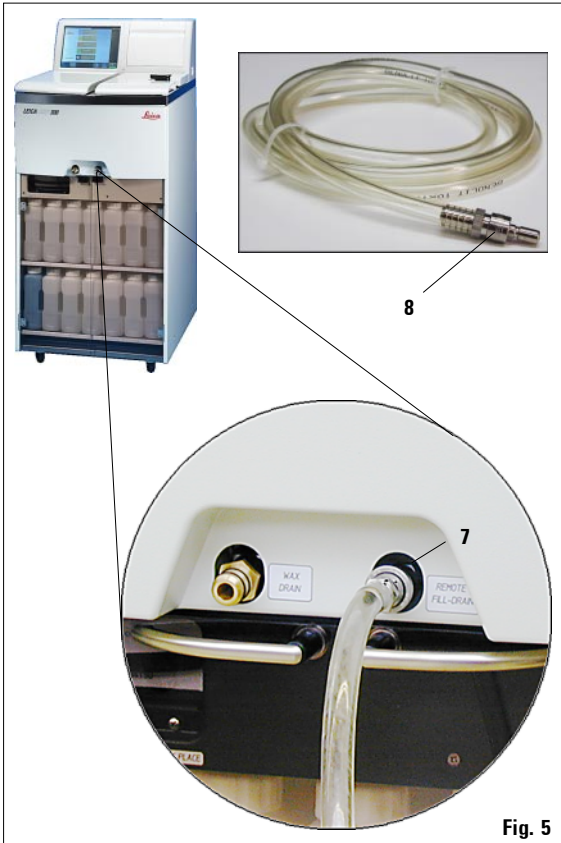


Fig. 5

Remote fill / drain hose

- Connect the remote fill / drain hose as shown in Fig. 5.
- Important!
When inserting the hose into the fill/drain connection (item 7 in Fig. 5) the connecting device (8) of the hose must lock with an audible click.

4. Setting up the instrument

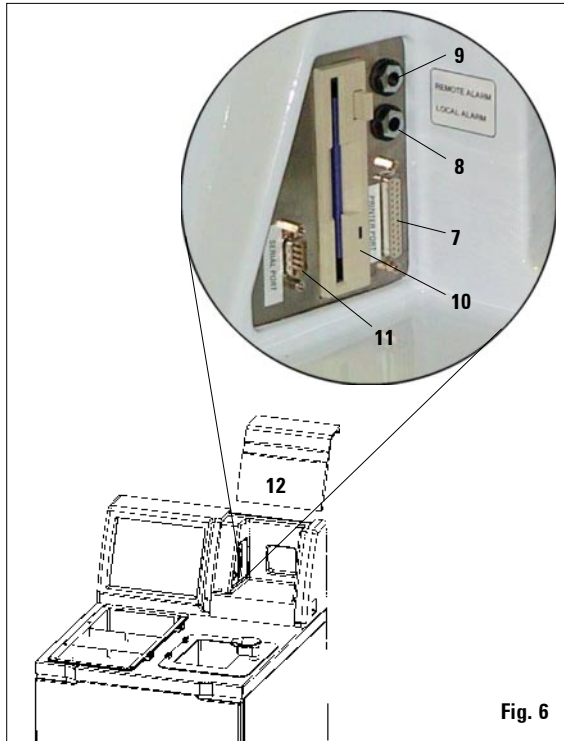


Fig. 6

4.4 Setting up the data connections

Printer (optional)

- Lift off the instrument console flap (12).
- Connect the printer to the printer port (7) via a standard Centronics cable (refer Fig. 6).

Other connections

- For additional data transfer and storage the instrument console is equipped with a standard 1.44 MB floppy drive (10) for 3.5" diskettes and with an RS 232 serial port (11) .



Only instruments which satisfy the requirements for SELV circuits may be connected to interfaces (7), (8), (9) and (11).

4.5 Alarm functions

The Leica ASP300 is equipped with two different alarm functions:

Instrument alarm

This alarm is generated from within the Leica ASP300. The instrument alarm is generated in all alarm situations.

Remote alarm

This alarm device is installed outside of the Leica ASP300.

All alarms (all types of alarm) are forwarded to the remote dialer connected to the instrument, regardless of whether the local instrument alarm (type 1) is connected or disconnected.



The optional remote alarm system works via a potential-free relay. If an alarm situation occurs, the circuit is closed. The remote alarm device connected to the instrument must be rated at less than 2 amp. A maximum voltage of 30 V DC may be present.

Connecting a remote alarm device:

A remote alarm device can be connected to the Leica ASP300 via a 6.3 mm-diameter jack connector (optional accessory).

- For details on how to connect a remote alarm device to the Leica ASP300, please contact your local Leica office or the manufacturer Leica Microsystems Nussloch directly.

4. Setting up the instrument

4.6 Switching the instrument on



Once the instrument has been switched on, the mains switch (ON/OFF) (5) should always remain in position ON.

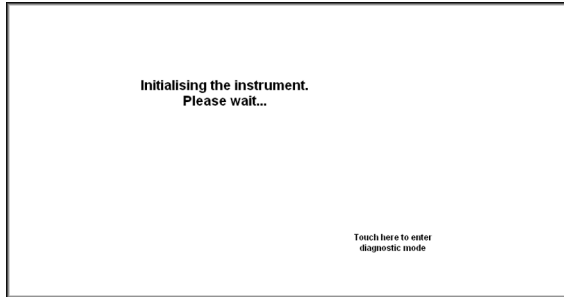


Fig. 7

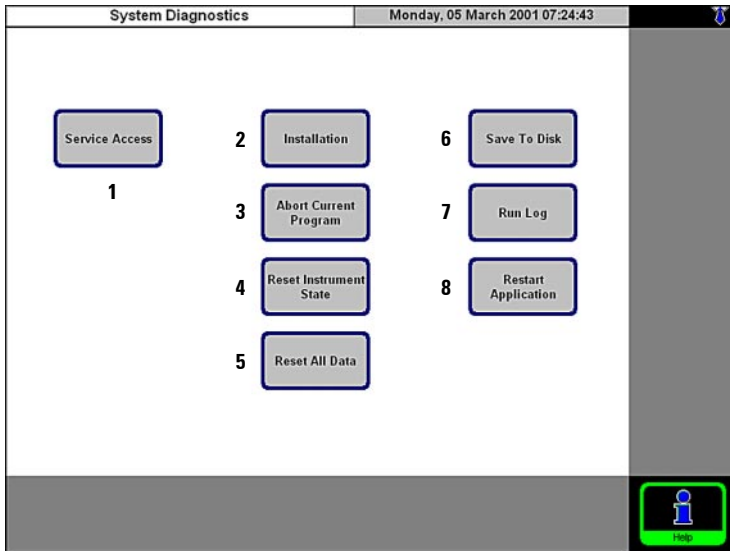


Fig. 8

- After switching it on the instrument will take a few minutes to initialize (see opposite - Fig. 7).
- After initialization, the **FAVORITES** screen will be displayed (Fig. 8).

Screen saver

- A screen saver will operate turning the screen off when no key has been pressed for a (user-) programmable time. Press any part of the touchscreen to restore the screen. After having been restored, the screen will be inoperational for a few seconds to avoid accidental activation of any key symbols.



System diagnostics menu

If, during initialization, 'Touch here ...' is touched (refer Fig. 7) and subsequently the supervisor password is entered, the **SYSTEM DIAGNOSTICS** menu (Fig. 9) opens up, giving access to standard instrument settings.

Attention!

Serious instrument malfunctions may occur if any settings are modified wrongly.

Fig. 9

The following functions can be selected:

- 1 - Access for service engineers only.
- 2 - Access **INSTALLATION** menu.
- 3 - Abort the current program.
- 4 - Abort the current program and delete the current allocation of reagents to reagent bottles and retort.
- 5 - Delete all programs and reset instrument status (all lists will be empty).
- 6 - Store actual instrument status on floppy disk.
- 7 - Display run log.
- 8 - Restart instrument.

To exit this menu, the instrument has to be restarted - press: **RESTART APPLICATION**.

Press **YES** to confirm '**ARE YOU SURE YOU WANT TO ...**' (refer Fig. 10).

- Initialization starts again from the screen shown in Fig. 7.



Fig. 10

4. Setting up the instrument

4.7 Touch screen functions

4.7.1 User interface - overview



The Leica ASP300 is programmed and operated via a colored LCD touch screen.

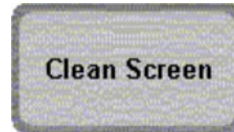
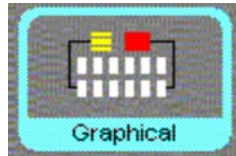
An on-line help feature provides detailed information on all instrument functions.

HELP can be accessed from any screen by pressing the **HELP** button.



Button symbols

To activate any functions on the Leica ASP300 touchscreen, press the corresponding button symbols. Examples of buttons are:



Enabled



Buttons on the Leica ASP300 touch screen can either be enabled or disabled.

Disabled



A button that is disabled appears with a thinner border than a button that is enabled.

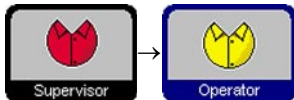
4.7.2. Access control

The Leica ASP300 may be configured to allow two levels of user access.

'Operator' symbol



'Supervisor' symbol



Operator access level:

- Operators may run programs and view results. On this level, the **OPERATOR** symbol is displayed in the upper right corner of the touch screen.

Supervisor access level:

- Supervisors may perform all Operator functions, and additionally create programs and perform the instrument sit-up functions.
- To access Supervisor level, press **SUPERVISOR**, enter the required password and confirm. The **SUPERVISOR** symbol will then be displayed instead of the **OPERATOR** symbol and all enabled buttons will be surrounded by a black border instead of a blue one.



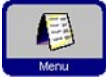



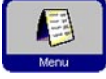


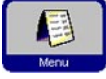

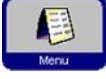
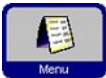
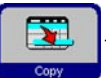
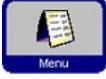


Lock feature against unauthorized use

- The Leica ASP300 provides a feature called "Lock" to prevent access to any operations of the Leica ASP300 to unauthorised users.
- The 'Lock' mode and the corresponding 'Lock' password are configured from the **SYSTEM SETUP** menu.

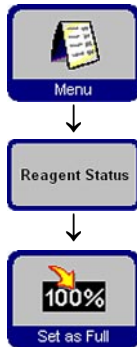
4. Setting up the instrument

4.8 Check list for first operation (at supervisor access level)

Screen	→	Press button	Parameter settings
	→	 → Installation	Enter instrument name and select language. Activate printer (optional).
	→	 → System Monitor	Enter carbon filter age warning and pump warning threshold.
	→	 → System Setup	Set all parameters as required, especially wax bath set temperature. Check whether date and time are correct.
	→	 → Reagents → 	Add the desired reagents and edit the 'REPLACE REAGENTS' warning thresholds.
	→	 → Stations → Reagent Name	Allocate a reagent to each of station.
	→	Smart Screen OR Reagent Status	Fill the reagent stations (bottles), either via the ASP300 remote drain/ fill function (SMART SCREEN) or manually (REAGENT STATUS).
	→	Programs →  → Program Name	Create the programs you need. Programs can be copied and modified.
	→	Favorite Programs → Program Name	Allocate the most popular programs to the FAVORITES menu and, if desired, set a finish time for these programs and allocate a symbol.

5.1 Reagent handling

5.1.1 Fill/drain reagents (other than wax)



1. Manually changing the reagents

- Remove the appropriate reagent bottle from the Leica ASP300 reagent cabinet, remove the bottle screw cap.
- Drain/refill the reagent by pouring to/from a bulk container.
- On the **REAGENT STATUS** screen, verify correct allocation and set the reagent bottle as full.

2. Use the 'Remote Fill / Drain' features of the Leica ASP300

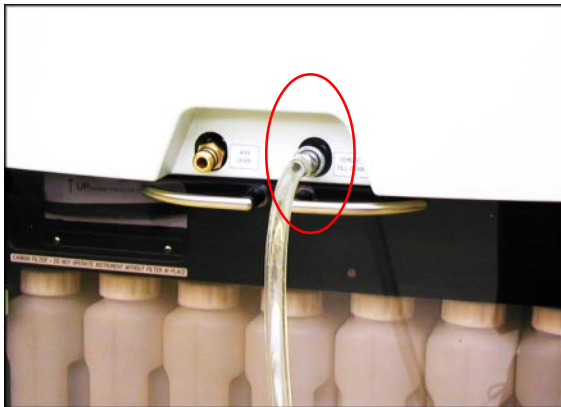


Fig. 11

Connect the supplied remote fill/drain hose to the remote drain connection (refer Fig. 11).

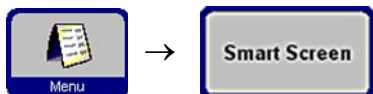


Important!

Ensure that the hose is pushed all of the way onto the connection, until a clear click is heard

- Put the loose end of the remote fill/drain hose into the desired container for the drain/fill operation as desired.

5. Operation



Fill / drain reagents

In **FAVORITES**, press **MENU**. In **MENU FUNCTIONS**, press **SMART SCREEN**.

The **SMART SCREEN** (Fig. 12) pops up.

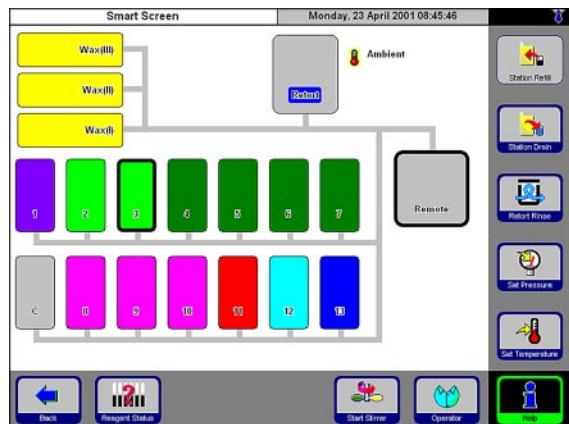
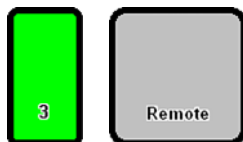


Fig. 12

Select station

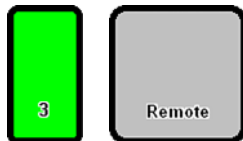


Press key symbol



Remote drain

- On the screen, select reagent bottle **no. 3** and the bulk container (**Remote**). The press **STATION DRAIN**.
- Check for leaks.



Remote fill

- On the screen, select reagent bottle **no. 3** and the bulk container (**Remote**). The press **STATION REFILL**.
- The remote fill procedure takes less than 3 minutes.
- Check for leaks.

5.1.2 Changing the wax

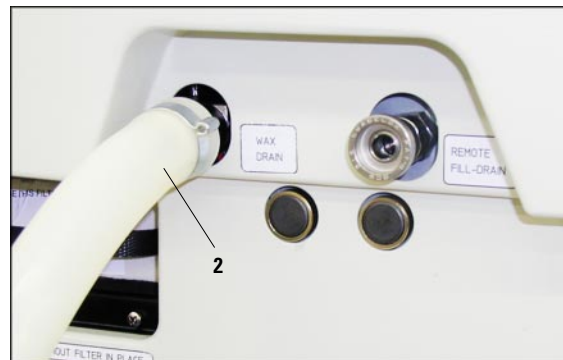
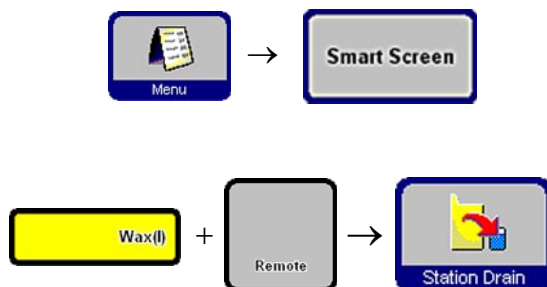


Fig. 13

Draining the wax

- Connect the paraffin drain hose (2) as shown in Fig. 13 and insert the loose end of the hose into a remote collecting container.
- Make sure the hose end is securely kept in the remote container until both the drain has been completed and the hose has been purged with pressurized air.



From the **FAVORITES** screen, press **SMART SCREEN** (see previous chapter).

- Select the wax bath to be drained and the remote container ('Remote'). Then press **STATION DRAIN**.
- Several queries will be displayed each of which has to be confirmed individually.

5. Operation

Filling with wax pellets



Reagent Status								Sunday, 22 April 2001 05:43:00 PM	
Station	Reagent	Blocks Since Changed	Cycles Since Changed	Days Since Changed	Blocks Since Cleaned	Cycles Since Cleaned	Days Since Cleaned	Status	
1	Formalin	285	2	3				Full	
2	70% IMS	285	2	1				Full	
3	95% IMS	0	0	1				Full	
4	ABS IMS	285	2	1				Full	
5	ABS IMS	0	0	9				Full	
6	ABS IMS	0	0	1				Full	
7	ABS IMS	0	0	1				Full	
8	Xylene	285	2	1				Full	
9	Xylene	0	0	9				Full	
10	Xylene	0	0	9				Full	
11	Cleaning Solvent		2	9				Full	
12	Cleaning Alcohol		0	0				Full	
13	Cleaning Water		0	0				Full	
13 Ext	Cleaning Detergent		0	0				Full	
Wax(1)	Paraffin Wax	0	0	0	0	0	0	Full	
Wax(2)	Paraffin Wax	0	0	0	0	0	0	Full	
Wax(3)	Paraffin Wax	0	0	0	0	0	0	Full	

Fig. 14



Fig. 15

- Remove the splash protector.
- Fill the wax bath (Fig. 15) with wax pellets up to the top.
- Press **BACK** and **REAGENT STATUS** to access the reagent status table (Fig. 14). Highlight the wax bath you just filled and press **SET AS FULL**.
- After about 90 minutes, add another 0.5 kg of wax pellets.
- The pellets will take a total of approx. 10 hours to melt.



Important!

During the melting process, the paraffin level **MAY NOT** drop below the **MIN** level (2, Fig. 15).

- Once the paraffin is completely molten, re-insert the splash protector.

Software control

- The software calculates when the wax will be ready for use and selects program starting times accordingly, i.e. the paraffin will definitely be molten when it is required for the first paraffin step.

Adding molten paraffin

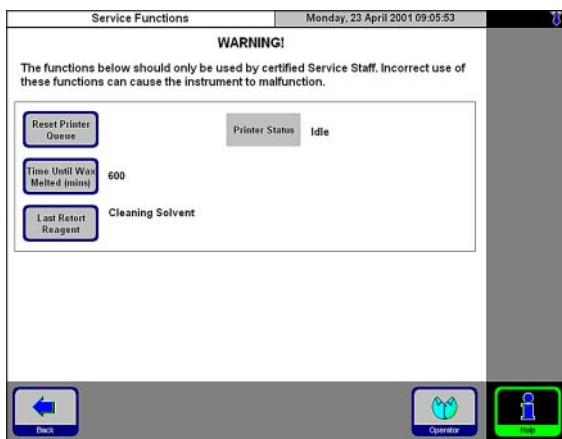
- Molten wax may have a maximum temperature of 70°C.
- If filling with molten wax, do not fill above the **MAX** level (see Fig. 15).
- After a wax bath has been filled, it must be marked as 'full' in the **REAGENT STATUS** screen.

Software control

- If the wax baths are filled with molten wax, it is possible to override the Leica ASP300 melting time calculation.



For that purpose, in supervisor mode, access the **SERVICE FUNCTIONS** screen (Fig. 16).



- Press **TIME UNTIL WAX MELTED**.
- Enter the required delay time and press **OK** to confirm.

Time Until Wax Melted (mins)

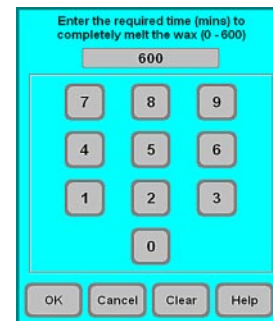


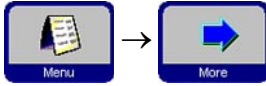
Fig. 16



If the instrument attempts a paraffin step with the paraffin only partly molten, severe instrument malfunctions may occur.

5. Operation

5.2 Setting up the instrument parameters

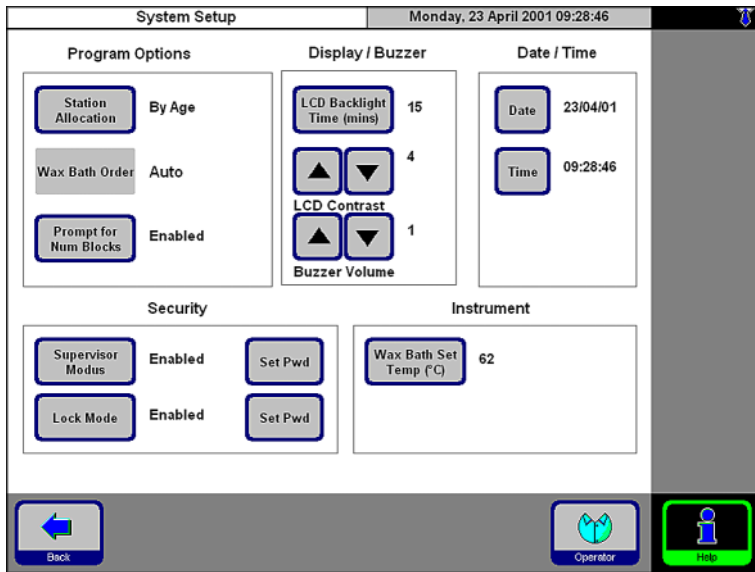


From the start screen, press **MENU** to go to the **MENU FUNCTIONS** screen, then press **MORE**.



In the **MORE MENU FUNCTIONS** screen, press **SYSTEM SETUP**.

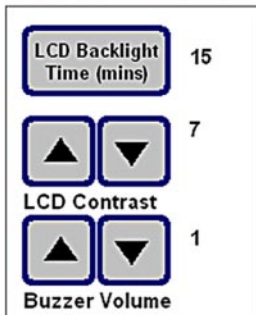
5.2.1 System setup



SYSTEM SETUP screen (Fig. 17).

Fig. 17

Display / Buzzer



The **DISPLAY/BUZZER** field is practically self-explanatory:

- The number next to **DISPLAY OFF** indicates the remaining time (in min) until the screen saver (after the last user action) is activated.
- **LCD CONTRAST** can be set from 0 to 14.
- The **BUZZER VOLUME** can be set between 1 and 10.

Program Options

Selection of the options on how programs are carried out.

Program Options

Station Allocation	Sequential
Wax Bath Order	1. Wax(I) 2. Wax(II) 3. Wax(III)
Prompt for Num Blocks	Disabled

- **STATION ALLOCATION:** **By age** or **Sequential**
By age - RMS is activated, reagents will automatically be used in order of increasing cleanliness.
Sequential - reagents will be used in sequential order of stations.
- **WAX BATH ORDER:** **Auto** or **1.; 2. ; 3.**
Wax bath order can be activated only when **STATION ALLOCATION** is set to **Sequential**.
- **PROMPT FOR NUM BLOCKS :** **Enabled** or **Disabled**
Enabled- When starting a program, the actual number of blocks **must** be entered.
This is recommended with the RMS being enabled.
Disabled - Number of blocks can be entered optionally (not mandatory).

Date / Time

Date	13/02/01
Time	12:45:42

Date / Time

Be sure to verify that the date and time entered do actually correspond to the local time/date.

Press the buttons to access the entry windows where time/date can be corrected, if necessary.

Instrument

Wax Bath Set Temp (°C)	60
------------------------	----

Instrument

Press **WAX BATH SET TEMP (°C)** to access the wax bath temperature entry window. Select the highest temperature compatible with the type of paraffin used as paraffin temperature will drop slightly once the paraffin is in the retort.

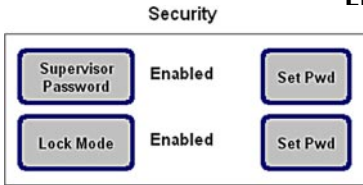
5. Operation

Security

To determine the level of access to the instrument.

- **SUPERVISOR PASSWORD: Enabled or Disabled**

Enabled - A password is required for access to the supervisor level.



Disabled - All instrument and software functions are fully accessible to all staff.

- **LOCK MODE: Enabled or disabled.**

Enabled - No screen functions can be accessed. To unlock, a password has to be entered.

Disabled- Screen can be accessed at any time until the screen saver turns off the screen.

Entry keyboard

The keyboard is displayed any time text needs to be entered. The keyboard headline (1) tells you what kind of text to enter. 30 characters can be entered into each entry field, though sometimes not all characters entered can be displayed.

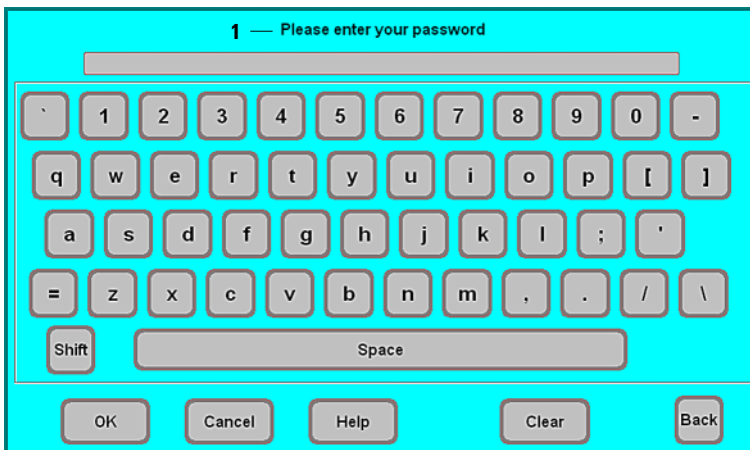


Fig. 18

Important keys

Shift:

To shift to upper case symbols.

AltGr :

For access to a number of special characters.

<-- :

Deletes last character entered.

Clear:

Deletes entire line.

5.2.2 Editing the reagent list

Adding new reagents

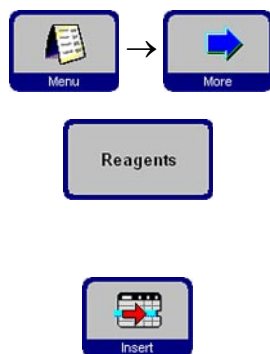
1. Enter the reagent name and allocate the new reagent to the reagent group it belongs to.
2. Define the stations (bottles) that will be filled with the new reagent.
3. Fill the stations (bottles) according to the reagent list.

Enter reagent names

Enter reagent names via the **REAGENTS** screen.

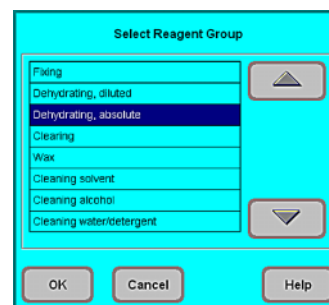
You must be logged on at supervisor access level to proceed.

- From the start screen, press **MENU** to go to the **MENU FUNCTIONS** screen, then press **MORE** to go to **MORE MENU FUNCTIONS**.
- Press **REAGENTS**.
- The **SET UP REAGENTS AND WARNING THRESHOLDS** screen opens.
- To add a reagent:
 - Press **INSERT**.
 - Enter the new reagent name.
 - Press **OK** to confirm.
 - You will then automatically be prompted to select the reagent group:



Setup Reagents and Warning Thresholds							Tuesday, 13 February 2001 11:35:21		
Name	Reagent Group	Blocks since Changed	Cycles since Changed	Days since Changed	Blocks since Cleaned	Cycles since Cleaned	Days since Cleaned		
Formalin	Fixing	5000	20	15					
70% IMS	Dehydrating, diluted	5000	20	15					
95% IMS	Dehydrating, diluted	5000	20	15					
ABS IMS	Dehydrating, absolute	5000	20	15					
Xylene	Cleaning	5000	20	15					
Paraffin Wax	Wax	5000	20	15	1000	6	5		
Cleaning Solvent	Cleaning solvent		20	15					
Cleaning Alcohol	Cleaning alcohol		20	15					
Cleaning Detergent	Cleaning water/detergent		20	15					
Cleaning Water	Cleaning water/detergent		20	15					

Select the reagent group



Allocate the new reagent to the desired group and press **OK** to confirm.

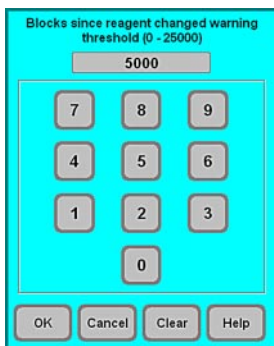
Fig. 19

5. Operation



Allocation of reagents to the correct reagent group is the basis for compatibility monitoring. Allocation to the wrong reagent group can lead to reagent cross contamination.

Changeable parameters



Entering / modifying reagent thresholds

- Highlight the reagent to be modified.
- Press the headline key symbol of the parameter to be changed.
- Enter a new threshold or - if no warning is desired - press **CLEAR** to remove the threshold altogether.
- Press **OK** to confirm.

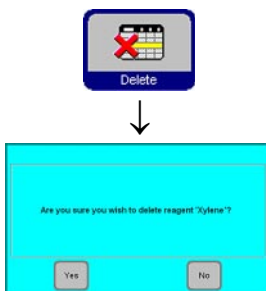


The same threshold value applies for all reagent stations containing the same reagent.

Changing reagent names or reagent groups



- Highlight the reagent.
- Press the corresponding headline key symbol.
- In the entry window (or via the keyboard), enter the new reagent group allocation.
- Press **OK** to confirm and save.
- Reedit all station and programs allocated to the reagent changed.



Deleting reagents

- Highlight the reagent to be deleted in the **SET UP REAGENTS AND WARNING THRESHOLDS** screen.
- Press **DELETE**.
- Press **OK** in the screen prompt.



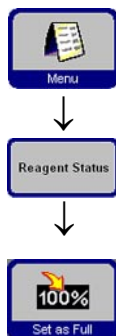
Please remember that a reagent which is already used in a program cannot be deleted.

Adding new reagents to stations

Go to **SMART FUNCTIONS** to remote-fill the reagent bottle.

If a bottle is filled manually, it must be defined as full afterwards.

For that purpose:



- Press **MENU** to access the **MENU FUNCTIONS** screen.
- Press **REAGENT STATUS**.
- In the reagent list, highlight the station / reagent that has been filled manually.
- Press **SET AS FULL** to mark the station as 'full'.



Upon activation of the RMS all warning thresholds for the selected reagent are automatically reset to '0'.

5. Operation

5.2.3 Viewing the program list



This list (Fig. 20) displays all programs currently existing in the ASP300.

View/Edit Programs		Monday, 05 March 2001 11:42:37
Number	Program Name	Program Duration
1	Routine Overnight Program	12:05
2	Day Run , Small Biopsies	03:30
3	Transplants	03:30
4	Fatty tissue	03:30
5	Brain	16:50
6	High Priority	01:51
7	Very Fast	00:44
8	Test 2 step	00:18
	Rapid Cleaning program	01:08
	Standard Cleaning Program	01:40
	Extended Cleaning program	02:02
	Wax Clean Program	00:30

You can create:

- up to 15 processing programs,
- 3 retort cleaning programs,
- 1 wax cleaning program.

At supervisor access level:

- the processing program names can be edited,
- new processing programs can be created and existing ones can be deleted.

Fig. 20



Important!

New processing programs are created by copying existing ones. Therefore, the list must contain at least one program at all times.

- Program duration cannot be edited directly.
- To alter the duration of a program, the duration of one or more individual program steps has to be modified.



Retort and wax cleaning programs are predefined and cannot be altered.

5.2.4 Adding and/or modifying programs



Creating a new program

- You must be logged on at supervisor level.
- In the **VIEW/EDIT PROGRAMS** screen (Fig. 20) highlight a program as similar as possible to the program you wish to create.
- Press **COPY** to copy the selected program.
The new program will have the same name as the program copied, however, the figure “(2)” will be added.
- Highlight the line containing the new program.
- Press **PROGRAM NAME**.
- Enter the new program name.

Editing program steps

- Press **EDIT** (refer Fig. 20) to access the **PROGRAM STEPS** screen.
- In the headline you will find the **PROGRAM NAME**.
- The colors on the left border of the table indicate the reagent groups to which the reagent of the step belongs.
- The program steps (max. 13 steps per program) are displayed in the order in which they are carried out.

The following characteristics can be edited:

- reagent name
- duration of step
(with the exception of fill and drain steps)
- retort temperature
(if “Ambient” is selected, the retort temperature indication remains empty)
- type of pressure and/or vacuum cycle
- retort drain time
- delay step.

5. Operation

Editing program steps

- To edit a step, highlight the corresponding line and press the respective headline.
- In the entry windows that pop up enter / select the program step settings.

The main interface displays the following table:

Reagent	Duration	Temp	P/V	Drain	Delay
Formalin	01:00	37	P/V	140	
70% IMS	00:40	37	P/V	80	
95% IMS	00:40	37	P/V	80	
ABS IMS	00:35	37	P/V	80	
ABS IMS	00:40	37	P/V	80	
ABS IMS	00:40	37	P/V	80	
ABS IMS	01:00	37	P/V	140	
Xylene	00:45	37	P/V	80	
Xylene	01:00	37	P/V	80	
Xylene	01:15	37	P/V	140	
Paraffin Wax	01:00	62	P/V	140	
Paraffin Wax	01:00	62	P/V	140	
Paraffin Wax	01:00	62	P/V	140	

The four pop-up windows for editing are:

- Reagent:** Select a reagent that is suitable for the station. Options: Formalin, 95% IMS, 70% IMS, ABS IMS, Xylene, Xylene 1, Paraffin Wax.
- Duration:** Enter the duration of the step (00:05 - 99:59). Value: 01:00.
- Temp:** Select the reagent temperature (Ambient, 35 - 55). Value: 37.
- P/V:** Select the cycle type. Options: Pressure, Vacuum, Pressure/Vacuum Cycle, Ambient.
- Drain:** Select the Drain Time. Value: 140.

Fig. 21

Editing program steps (continued)



Setting a delay step

A so-called 'delay step' ensures that a program is finished at a specified time.

- Highlight the program step you wish to define as a delay step.
- Press **DELAY**.
The delay symbol is moved to the selected step, thus defining the step as delay step.



Copying steps

- Highlight the step to be copied.
- Press **COPY**.



- Use the **MOVE UP / MOVE DOWN** symbols to move program steps up or down within an existing program without having to recreate those steps.



DELETING PROGRAM STEPS

- Highlight the step to be deleted.
- Press **DELETE**.

5. Operation

5.2.5 Favorites (maximum of 5 programs)

Favorites can be programmed to end either:

- “as soon as possible” (ASAP) or
- at a predetermined finish time.

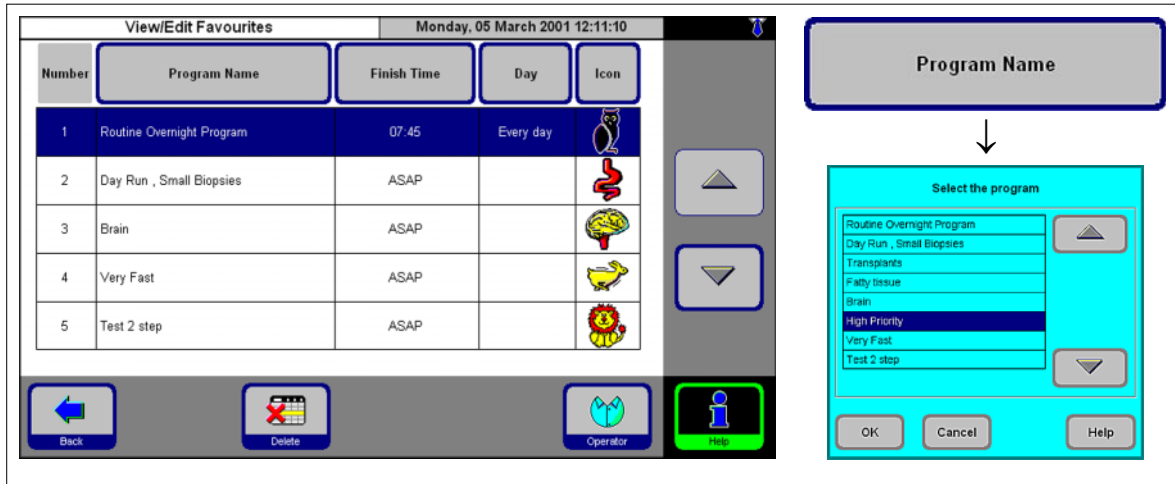
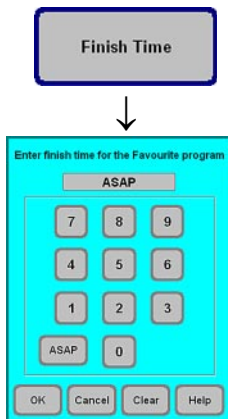


Fig. 22



Adding and/or modifying Favorites

- Highlight the program line to be altered.
- Press **PROGRAMS**.
- Select the desired program and press **OK** to confirm.

Setting a finish time

- Press **FINISH TIME**.
- Enter the finish time (24-hour clock). Select **ASAP**, if the program finish time is not to be delayed.
- Press **OK** to confirm.

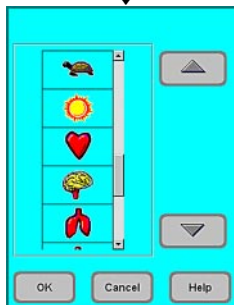


Assigning a finish day

- Press **DAY**.
- Select the desired week day in the list and press **OK** to confirm.

Assigning an icon to a "Favorite"

- Press **SYMBOL** in the table header.
- Select the desired icon and press **OK** to confirm.



The first icon on the list is empty - select this option, if you do not want to assign an icon to a specific program.



Deleting a 'Favorite'

- Highlight the Favorite to be deleted.
- Press **DELETE**.



The 'Favorite' is deleted from the FAVORITES list only - the program itself is not deleted.

5. Operation

5.2.6 Editing the stations



Fig. 23 shows all stations / allocated reagents currently defined in the instrument.

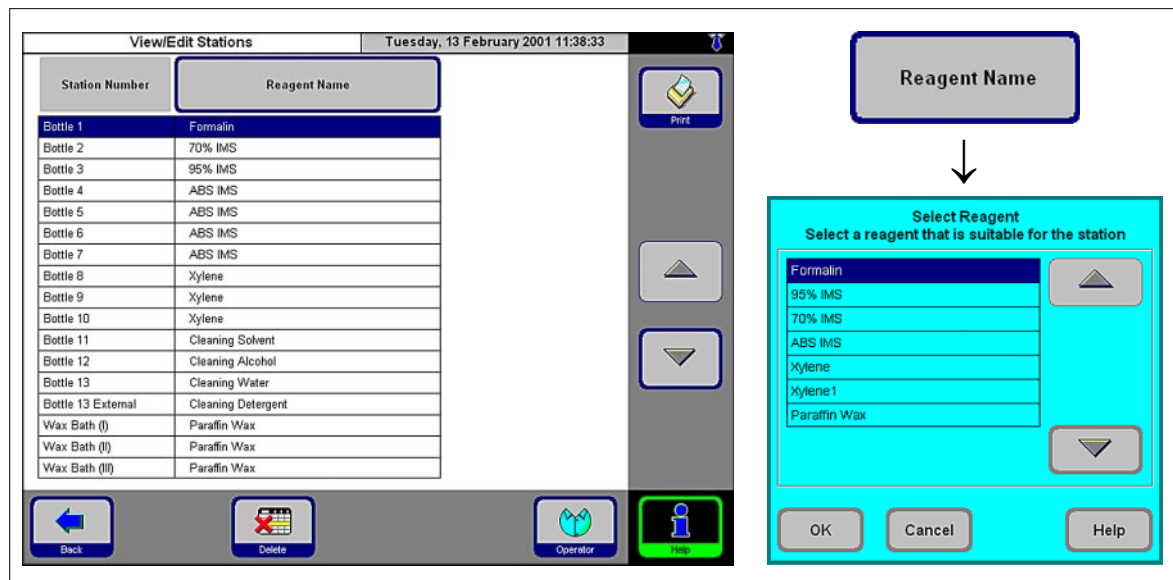



Fig. 23

Adding / changing reagents

Highlight the desired station.

- Press **REAGENT NAME**.
- The **SELECT REAGENT** entry window pops up.

 **Only those reagents that are compatible with the respective station will be available for selection.**

- Highlight the desired reagent and press **OK** to confirm.

Allocating reagents

- Only processing reagents (except paraffin) can be allocated to stations 1 – 10.
- Only a cleaning reagent can be allocated to station 11.
- Only a cleaning alcohol can be allocated to station 12.
- Only cleaning water/detergent can be allocated to stations 13 and 13-ext.
- Only paraffin wax can be allocated to the wax baths.

5.2.7 Reagent groups



In this screen (Fig. 24) you find the colors used for each reagent group in the graphic program display.

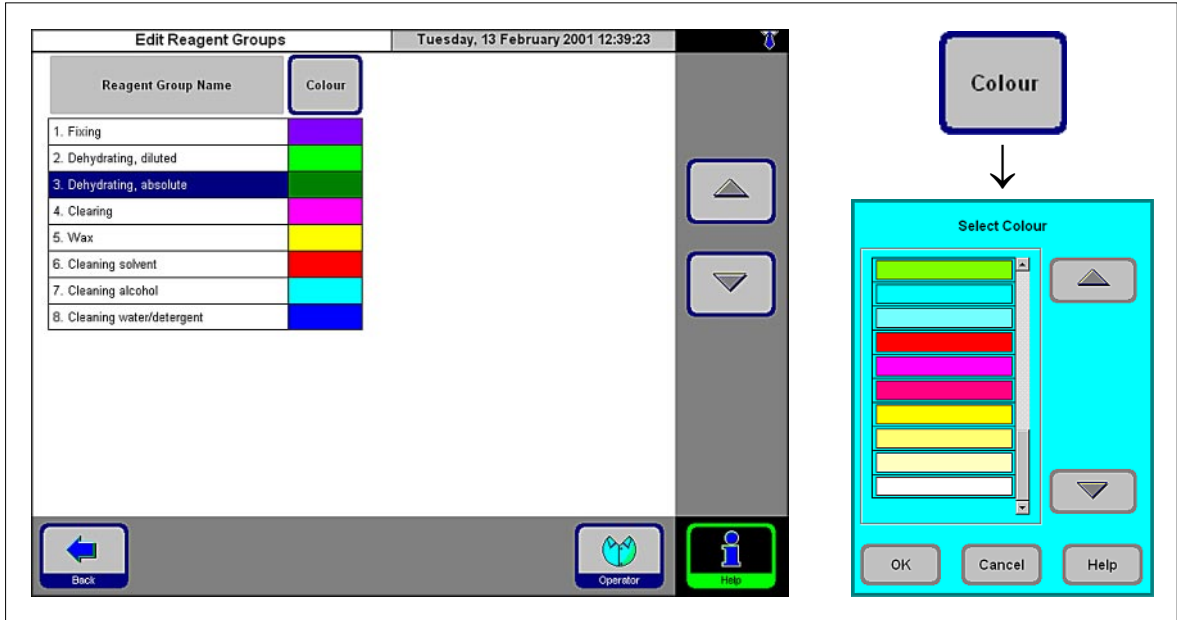


Fig. 24

Selecting a new color for a reagent group

- Highlight the line containing the reagent color you wish to change.
- Press **COLOR** in the table header: the entry window **SELECT COLOR** pops up.
- Select the desired color and press **OK** to confirm.
- If you want to close the entry field without changing the color, press **CANCEL**.

5. Operation

5.3 Programs

Programs can be started from two different screens:

FAVORITES (max. 5 programs)



Fig. 25

ALL PROGRAMS

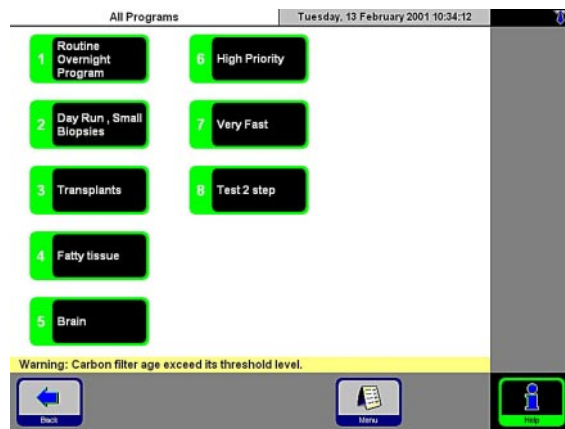


Fig. 26

A "Favorite" is a processing program that is frequently used.

All settings are already programmed. Only the number of blocks has to be entered (if this function is enabled).

Starting a "Favorite"

To start a Favorite, press the corresponding symbol on the Favorites screen - the program will be started immediately.



In the Favorites screen, press **ALL PROGRAMS**.

- Press the symbol corresponding to the program you wish to start.
- A graphic representation of the stations / retort will be displayed with the stations required for the program you are about to start colored in the corresponding reagent group colors (Fig. 27).
- Prior to starting it, modify the program as required.
All processing step modifications made will only be applied to the current program.

5.3.1 Editing a selected program

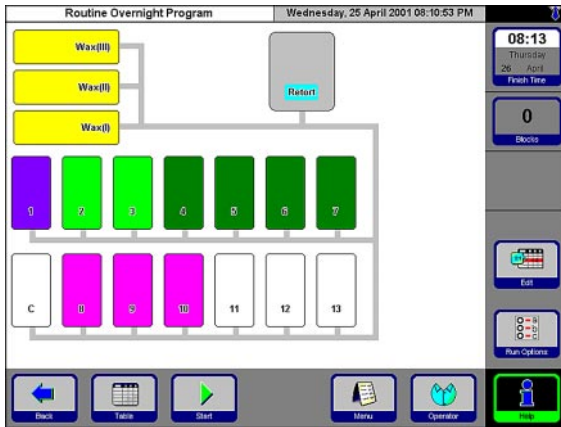


Fig. 27

To modify a program prior to starting it, press **EDIT** to access the Edit Program screen.

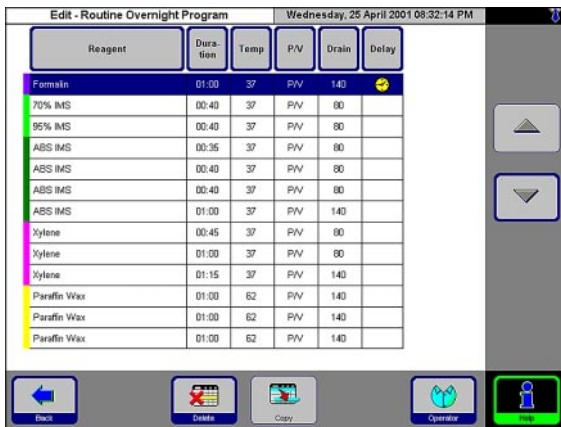
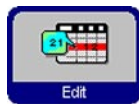


Fig. 29

Redefine the program finish time:

- Press **FINISH TIME**. In the entry window, set a new finish time.

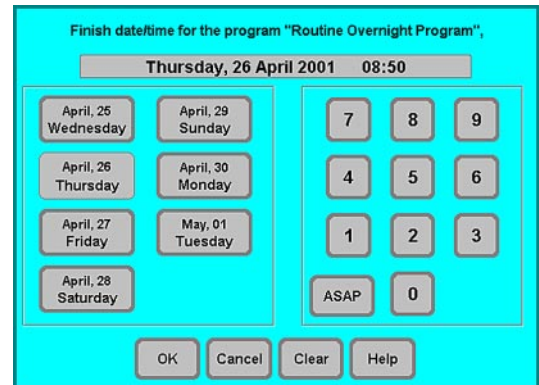


Fig. 28

- Enter the day when you want the program finished.
- Enter the finish time (24-hour clock format).
- Press **OK** to confirm.

5. Operation

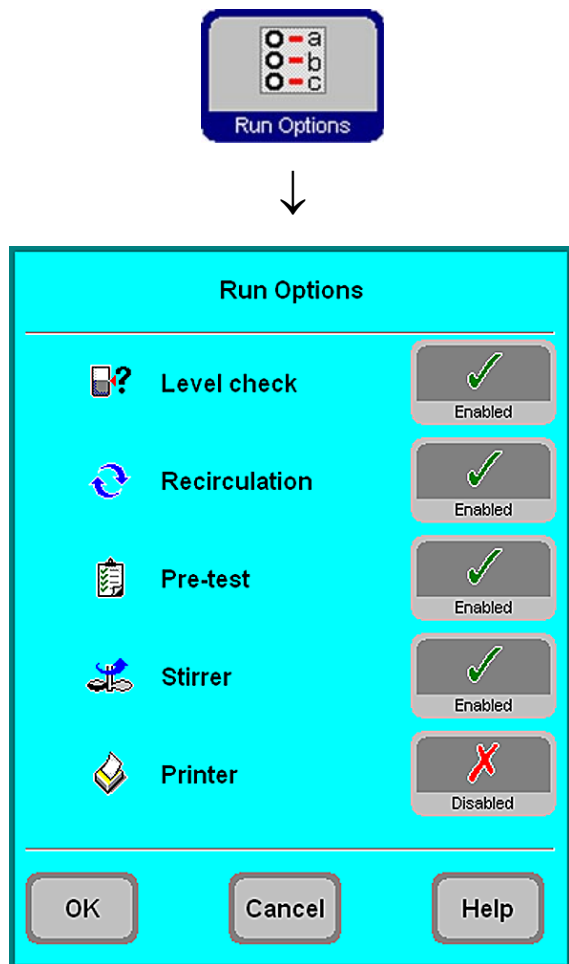


Fig. 30

Access the **RUN OPTIONS** function to display the options selected for the current program.

- **LEVEL CHECK** enabled:
The lower level sensor in the retort is activated.
- **RECIRCULATION** enabled:
During each processing step, the reagent is pumped periodically from the bottle to the retort and back for continuous and efficient mixing of fluid. The first pump step is carried out after 16 minutes, all subsequent pump steps in 12-minute intervals.
- **PRETEST** enabled:
After starting the program a test run is performed: the first reagent is pumped into the retort and back into the bottle.
- **STIRRER** enabled:
Magnetic stirrer is on.
- **PRINTER** enabled:
At the end of the program run, a full run log will be printed out.



Important!

The options selected will be applied to **ALL** programs!

All run options can be enabled / disabled during the program run if necessary.

The printer option will be displayed only if a printer has been configured for the instrument.

5.3.2 Starting a program

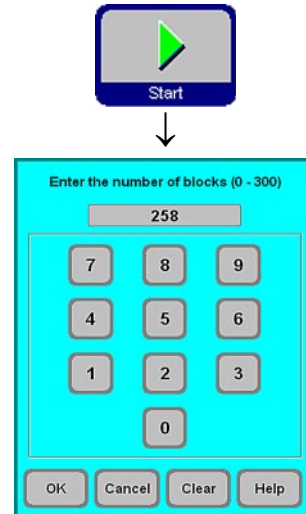
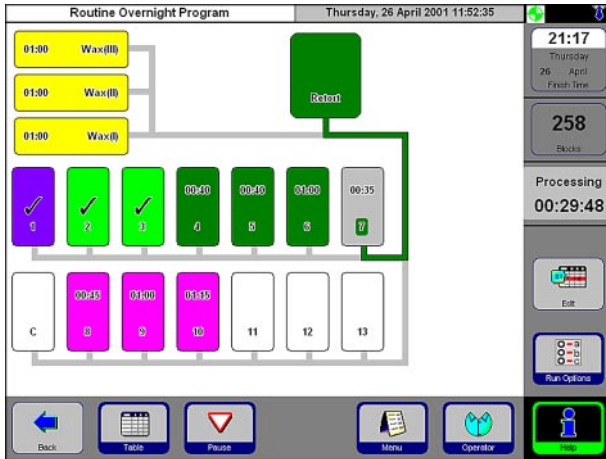
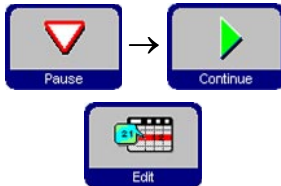


Fig. 31

- Press **START** to start the program. Press **OK** to confirm the query that follows. Enter the number of blocks, if the **NUMBER OF BLOCKS** option has been enabled.



- The **FINISH TIME** button shows the time when the current program will be finished.

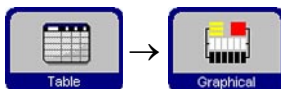


- Before a program in progress can be modified, the **PAUSE** symbol must be pressed.

To modify or delete program steps, press **EDIT** and, in the entry window, carry out any changes you wish to make. Press **CONTINUE** to re-start the program.



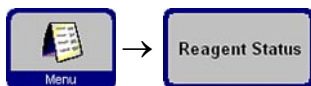
The finish time of a program in progress can only be changed as long as the delay step has not yet been completed.



- Press **TABLE** to change from graphic to tabular program display, press **GRAPHICAL** to go back to graphic display.

5. Operation

5.4 Reagent status



In the reagent status screen (Fig. 32) you can display and update the actual reagent status of each station and you can set the stations as full or empty.

Reagent Status								Thursday, 26 April 2001 13:19:51	
Station	Reagent	Blocks Since Changed	Cycles Since Changed	Days Since Changed	Blocks Since Cleaned	Cycles Since Cleaned	Days Since Cleaned	Status	
1	Formalin	1831	18	17				Full	
2	70% IMS	1315	13	17				Full	
3	95% IMS	1032	4	16				Full	
4	ABS IMS	1032	5	16				Full	
5	ABS IMS	774	3	2				Full	
6	ABS IMS	516	4	0				Full	
7	ABS IMS	1032	5	16				Full	
8	Xylene	1057	6	16				Full	
9	Xylene	1032	6	16				Full	
10	Xylene	1290	7	16				Full	
11	Cleaning Solvent		12	16				Full	
12	Cleaning Alcohol		14	16				Full	
13	Cleaning Water		30	16				Full	
13 Ext									
Wax(I)	Paraffin Wax	1032	6	8	516	4	1	Full	
Wax(II)	Paraffin Wax	774	3	8	774	3	8	Full	
Wax(III)	Paraffin Wax	799	4	8	799	4	8	Full	

- Warning thresholds that trigger warning messages appear on a red background.
- To change a reagent status, highlight the corresponding line and press the corresponding key symbol .

Fig. 32

Reagent warnings

If the RMS is enabled, the instrument will give you warning messages when reagents have been used for too long.

Warning messages for normal reagents are given based on up to 3 criteria; warning messages for paraffin wax on up to 6 criteria.

The warning messages are displayed at the end of a cleaning cycle. From there, you can go directly to the **REAGENT STATUS** screen.

In addition, warning messages (on a yellow background) are displayed in the program start screens.

Criteria for warning messages

For normal reagents, the following warning criteria apply:

- number of blocks processed
- number of programs carried out
- number of day lapsed

since the reagent has last been changed.

For paraffin wax, three additional criteria can be applied:

- number of blocks processed
- number of programs carried out
- number of days lapsed

since the wax has last been cleaned.

5.5 System Monitor



The **SYSTEM MONITOR** screen supplies important information on the Leica ASP300 system status.

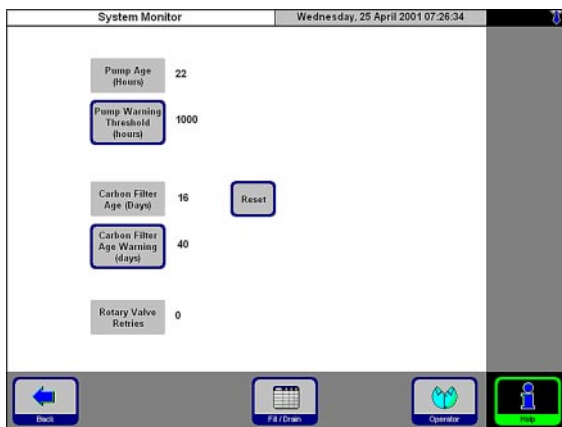


Fig. 33



After replacing the filter press **RESET**.

ROTARY VALVE RETRIES:

If a figure higher than 50 is indicated, a preventive maintenance is recommended.

FILL/DRAIN:



This screen displays the average fill / drain times of all stations (in seconds).

Short term = average duration of last 5 fills / drains.

Long term = average duration of last 20 fills / drains.

If one of the figures displayed exceeds 250, call Leica Technical Service.

5. Operation

5.6 On-line help



The Leica ASP300 features an extensive on-line **Help** system. For information on basic problems refer to the Help Index (to access press **INDEX** on the Help screen).

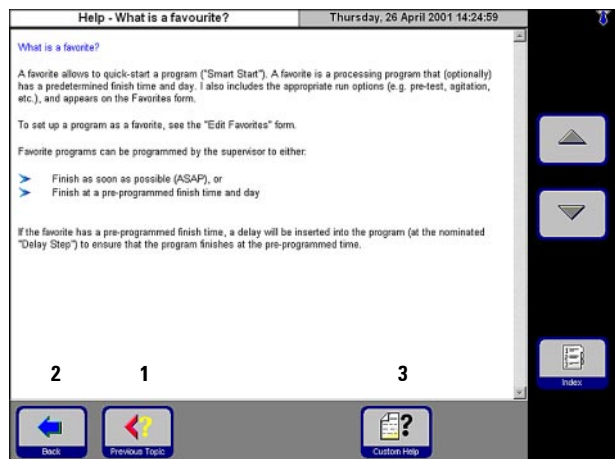


Fig. 34



Use the **UP/ DOWN** arrows to scroll.

Press **PREVIOUS TOPIC (1)** to return to the index.

Press **BACK (2)** to go back to the screen from where you accessed Help.

CUSTOM HELP (3) is only displayed, if user-specific help files have been installed.

Detailed information on how to create and install customer-specific help files can be found in the **“What is Custom Help?”** help text.

Accessing ‘Help’ in the event of error messages

- Press **DETAILS**, or
- Press the **HELP** button on the error message.

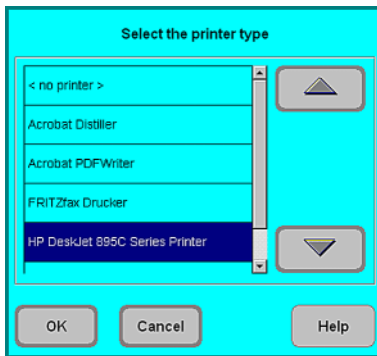
5.7 Configuring a printer (optional)



To select and configure a printer, proceed as follows:



- With a Centronics standard cable, connect the printer to the printer port (refer [chapter 4.4](#), [Fig. 6](#)).



Printing run logs

Printing is possible when the **PRINT** symbol is displayed.



For the PRINT symbol to be displayed, a printer must have been configured for the instrument.

The following lists and protocols can be printed:

- reagent list,
- stations list,
- reagent status list,
- all programs,
- run log,
- error log.

6. Trouble shooting

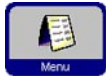
6.1 General

The Leica ASP300 is equipped with a trouble shooting system.

If an error is detected, detailed error messages and corresponding user instructions on what to do are displayed on the touch screen.



For all correctable error conditions the instrument will take corrective actions to protect the specimens.



- Details of all events are recorded in “Run Log”.
Run log can be viewed by pressing **MENU** and then **RUN LOG**.

6.2 Power failure

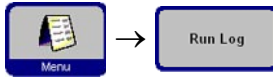
Power failure during a processing program

- In the event of a power failure, the instrument automatically compensates any impact the power failure might have on the specimens.

Power failure during a paraffin or retort clean cycle

- If a power failure occurs during a clean cycle, the total duration of the cycle will be extended by the duration of the power failure.

6.3 Trouble shooting



- Check for error messages indicating the nature of the problem.
- Press the Help button on the message for any information relating to the cause.
- Check the Run Log for any information on the nature of the failure.



Use the SMART SCREEN functions to individually test operations such as fill, drain, pressurizing and evacuation operations.

Power failure

- Verify that the mains lead is plugged in to the wall socket, and that, if applicable, the wall socket is switched ON.
- Verify that the jumper lead or UPS lead are fully inserted into their respective socket.
- Verify that the power switches on the rear (adjacent to the power lead) and on the side of the instrument are both switched ON.



If, by carrying out the above listed steps, you cannot identify the problem, call Leica Technical Service.

6. Trouble shooting

6.4 Typical fill or drain problems

Fill and drain problems may be due to several causes:

1. There is insufficient reagent

- Verify that both the reagent bottles and the wax stations have sufficient reagent.

2. Insufficient pressure or vacuum

The Leica ASP300 is unable to create sufficient vacuum (for a fill) or pressure (for a drain) in the retort.

- Verify that the reagent bottle in question is correctly inserted in the reagent cabinet.
- Verify that all reagent bottles are fully pushed home into their sockets.
- Check whether there is some debris under the retort lid seal causing a leak.

3. There is a blockage in the air or reagent lines

If there is reagent in the retort that cannot be drained, try to remove the blockage as follows:

- Heat the retort to the maximum possible temperature (consistent with the reagent currently in the retort, if any) and leave it at this temperature for at least 15 minutes.
- Whilst the retort is at maximum temperature, attempt to fill or drain.
- If the retort is empty:
Run the extended retort clean program. Use the maximum settings for number of clean cycles and temperature (consistent with the type of reagents/solvents used in the clean program).



If you cannot eliminate the problem by carrying out the above listed steps, call Leica Technical Service

7.1 Clean programs



You find the clean programs at the end of the programs list (Fig. 35). To display a clean program, highlight the respective line and press **EDIT**.



The ASP300 offers three retort clean programs and one paraffin clean program. Clean programs cannot be copied or deleted.

7.1.1 Retort clean programs

2. Standard Cleaning Program				Tuesday, 23 October 2001 10:41:54	
Reagent	Number of Cycles	Duration	Temp		
Cleaning Xylene	9	00:48	65		
Cleaning Ethanol	6	00:42	65		
Cleaning Water	2	00:10	65		

A clean program comprises a minimum of three and a maximum of four steps:

1. Cleaning Solvent
1 step from station 11
2. Cleaning Alcohol
1 step from station 12
3. Cleaning Water
1 step from station 13

Optional step between steps 2 and 3:
Cleaning Water / Detergent
1 step from station 13-ext.

Fig. 35

- The steps of retort clean programs are listed in the order in which they are carried out.
- The clean programs skip any steps not required to complete the retort clean.

7. Cleaning and maintenance

Editing steps

- To edit a program step highlight the corresponding line and press the respective table header.
- To disable a step, set the number of cycles to "0". Only cleaning water steps can be disabled.

The following characteristics of each step can be edited:

- **Reagent name** - only those reagents that are compatible with the reagent station being edited will be displayed.
- **Number of cycles** - the duration displayed is calculated based on the number of cycles.
- **Retort temperature** - temperatures from 50 to 65 °C can be set.

Station 13-ext

- The term "13-ext" stands for an additional station which can be used instead of station 13.
- Station 13 always contains cleaning water.
- If a program contains a "13-ext" step, during the clean cycle the operator is prompted to insert bottle "13-ext" when needed, and to remove the bottle as soon as the step has been completed.



**Only reagents belonging to the cleaning water group can be allocated to station 13-ext.
Station 13-ext may be used for clean programs only.**

7.1.2 Wax clean programs

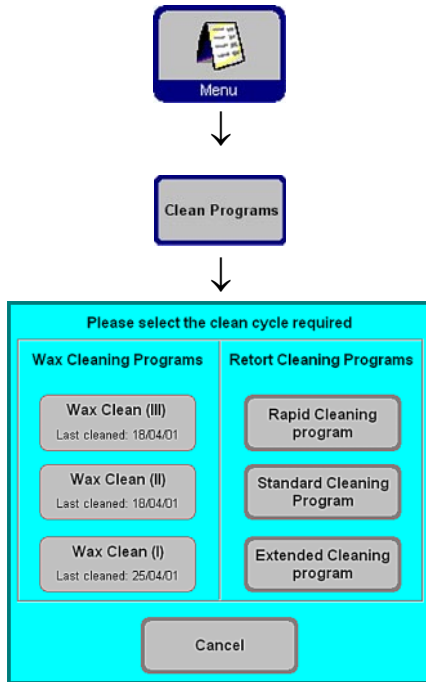


Fig. 36

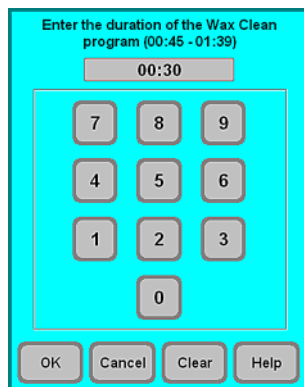


Fig. 37

The Leica ASP300 contains a wax clean feature that removes solvents (**xylene**) from used wax.

Follow the instructions on the left (Fig. 36) to run a wax clean program.

The duration of the wax clean program is user-programmable.

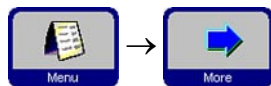
Follow the instructions in Fig. 37.

7. Cleaning and maintenance

7.1.3 Smart clean

The Smart Clean prepares the ASP300 for transport.

Prior to starting a Smart Clean, a complete retort clean program must be run.



To start a Smart Clean, press **SMART CLEAN** on the **MORE MENU FUNCTIONS** screen and press **OK** to confirm.

The Smart Clean takes approx. 15 minutes and consists of 3 phases:



Phase 1:

Make sure all reagent containers are inserted correctly.
All internal tubing is cleaned with pressurized air.

Phase 2:

Before phase 2 starts, the operator is prompted to remove all reagent bottles from the instrument.

All internal tubing is again cleaned with pressurized air.

Phase 3

Before phase 3 starts, the operator is prompted to insert an empty bottle into station 11.

The tubing is cleaned with pressurized air for the third time - remaining rests of reagents, if any, are forced back into station 11.



Empty and clean all reagent bottles thoroughly before reinserting them into the instrument to make sure there will be no reagent spills from the bottles that could cause damage during transport.



The SMART clean is ideal for removing residual liquid from the internal pipes of the instrument, as it thoroughly purges them with pressurized air. A SMART clean should be carried out once every month.

7.2 General cleaning steps

Paraffin wax baths



Warning! Be careful as the walls of the wax baths are very hot and may cause burns!

- Wipe the wax baths and lids clean.
The lid can be removed for cleaning purposes.
- If they are dirty, remove the wax strainers from the wax baths. Clean, dry and reinsert them.
- Ensure that the air vent hole at the top rear right hand corner is unobstructed.

Instrument exterior

Clean the instrument exterior as necessary. Wipe with a damp cloth moistened with mild detergent and dry.



Do not use solvents on painted surfaces and/or the touch screen!

Checking the drip tray



Fig. 38

Regularly check the drip tray for spilled reagents (refer [Fig. 38](#)).

7. Cleaning and maintenance

Draining the condensate bottle



Fig.39

- Remove and empty the condensate bottle and reinsert (Fig. 39).

Exchanging the activated carbon filter



Fig. 40

- Exchange the filter as shown in Fig. 40.
- Replace the filter at least every four months – make sure to insert correctly – (see arrow on label)!
- Perform a Smart Clean prior to changing the filter.



Filter label

7.3.1 Daily cleaning and maintenance

Cleaning the retort lid

- Remove wax from the inside of the retort lid with the plastic scraper provided. Make sure to remove all wax from around the retort lid seal.
- For convenience, the lid may be removed during cleaning by lifting it vertically and sliding it towards the console.

Cleaning the retort

- The retort may be wiped clean using a cloth moistened with solvent (xylene or alcohol) or mild detergent. Ensure that the air holes at the top front of the retort are open - remove all dirt!

Cleaning the retort strainer

- Use alcohol or xylene to clean the strainer located at the bottom of the retort. For convenience, the strainer may be taken out to remove all solid dirt.

Cleaning the touch screen

- On the **MENU FUNCTIONS** screen press **CLEAN TOUCH SCREEN**.
- Clean the touchscreen.
- Press **ENABLE EXIT** and then **BACK** to return to **MENU FUNCTIONS**.

Cleaning the processor module top surface

- Remove both lids for cleaning.
- First scrape the stainless steel surface with the plastic scraper and then wipe down.

Reagent and condensate bottle seal lubrication

- To ensure easy removal of the reagent and condensate bottles, lubricate the O-ring seals on the plug-in nozzles with the O-ring lubricant supplied.
- Check regularly whether the reagent bottles are still properly connected to the connection manifolds in the instrument. Retighten, if necessary.

7. Cleaning and maintenance



This procedure is particularly important with bottles containing chloroform. Chloroform tends to swell the bottle seals, making them difficult to remove. This problem can be prevented by regular lubrication.

Checking the retort and wax bath lid seals

- Regularly check the retort and wax bath lid seals for damage. If a seal is damaged, it must be replaced without delay.

7.3.2 Periodic cleaning and maintenance

Cleaning the reagent bottles

- Remove the reagent bottles from the reagent cabinet. Empty and clean them using a bottle brush and a laboratory detergent in warm water.
- Never clean the reagent bottles in an automatic dishwasher.
- Wipe the stainless steel inner walls of the reagent cabinet with a damp cloth moistened with a mild detergent.
- Refill and reconnect the bottles once cleaned. Make sure the bottle lids are tight.
- Make sure the bottles are properly pushed home into the connection manifolds at the rear inner wall of the reagent module.

7.4 Preventative maintenance schedule

Maintenance activity	daily	weekly	monthly	every 4 months
Lubricate reagent bottle O-rings and check for damage.		√		√*
Wipe dry retort and lid after completing retort clean cycle.	√			
Clean exterior of instrument with soft cloth and minimal amount of xylene.	√			
Check retort strainer for any tissue or wax debris.	√			
Remove residual paraffin from inner surface of wax bath lid.	√			
Inspect and, if necessary, clean retort lid seal.		√		
Inspect and, if necessary, clean wax bath lid seal.		√		
Inspect and, if necessary, adjust paraffin levels.	√			
Inspect reagent container fluid levels.	√			

* if the automatic fill and drain function is actually being used

7. Cleaning and maintenance

Maintenance activity	daily	weekly	monthly	every 4 months
Inspect and, if necessary, clean wax bath strainers .		√		
Inspect wax bath air vent and, if necessary, clear.		√		
Inspect and empty condensate bottle. Clear inlet holes.		√		
Examine activated carbon filter.			√	
Replace carbon filter.				√
Remove fluid level sensor (float), inspect and clean.			√	
Inspect electrical connectors at the rear panel of the instrument.			√	
Inspect and, if necessary, clean inside reagent bottles.			√	
Check that the bottle caps and seals (O-rings) of the reagent bottles are in place and tight.			√	
Check that the reagent bottles are fully inserted in the connection manifolds.	√			

Warranty

Leica Microsystems Nussloch GmbH guarantees that the contractual product delivered has been subjected to a comprehensive quality control procedure based on the Leica in-house testing standards, and that the product is faultless and complies with all technical specifications and/or agreed characteristics warranted.

The scope of the warranty is based on the content of the concluded agreement. The warranty terms of your Leica sales organization or the organization from which you have purchased the contractual product shall apply exclusively.

Technical service information

If you require technical service or replacement parts, please contact your Leica sales representative or dealer who sold the product.

Please provide the following information:

- Model name and serial number of the instrument.
- Location of the instrument and name of the person to contact.
- Reason for the service call.
- Date of delivery.

Decommissioning and disposal

The instrument or parts of the instrument must be disposed of in compliance with the local laws.

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